WHAT IS CLAIMED IS:

1. An optical path simulation CAD system comprising:

a model creation unit for creating a three-dimensional optical model in which one or more optical components are disposed on an optical path extending from a light source to a final arrival position; and

an optical axis auto-creation unit for figuring out optical axes indicative of behaviors of beams of light in said three-dimensional optical model on the basis of predetermined set parameters, said optical axis auto-creation unit providing displays of said optical axes in said three-dimensional optical model, for verification.

2. A system according to claim 1, wherein

said optical axis auto-creation unit defines the optical axis diameter and the color of a beam of light emitted from said light source, said optical axis auto-creation unit creating and arranging a cylindrical optical axis model having a length starting from said light source and ending in an input surface of a next adjacent optical component lying on said optical path.

3. A system according to claim 2, wherein

said optical axis auto-creation unit varies the

optical axis diameter of said optical axis model as a function of the distance from the starting point.

4. A system according to claim 1, wherein for said optical component(s) interposed between said light source and a final arrival position, said optical axis auto-creation unit creates output-side optical axis model(s) in conformity with optical functions of said optical component(s) from input optical axis model(s), to arrange said output-side optical axis model between said optical component and a next adjacent optical component or said final arrival position.

5. A system according to claim 4, wherein in case said optical component lying on said optical path is a movable reflecting mirror that is capable of swinging around a predetermined rotational axis, said optical axis auto-creation unit is able to designate as control parameters the position of said rotational axis and the angle of a reflection surface within a three-dimensional space, said optical axis auto-creation unit automatically creating and arranging reflected optical axis models from input optical axis models on the basis of said control parameters.

6. A system according to claim 4, wherein

in case said optical component lying on said optical path is a polygon mirror that has a plurality of mirror faces formed on its periphery and that rotates at a certain angular velocity, said optical axis auto-creation unit previously defines the structures of said plurality of mirror faces, figures out the positions of said mirror faces within a three-dimensional space and the angles of the reflection surfaces from mirror rotational angles, and automatically creates and arranges an optical axis model reflected on a specific mirror face from an input optical axis model.

7. A system according to claim 1, wherein

in case said optical component lying on said optical path is a lens, said optical axis auto-creation unit previously defines optical functions of said lens and automatically creates an output-side optical axis model in conformity with said optical functions from an input optical axis model, to arrange said output-side optical axis model between said optical component and a next adjacent optical component or an image forming face.

8. A system according to claim 1, wherein

said optical axis auto-creation unit provides a display of an optical axis ending point at a position where an optical axis model intersects said final arrival

face, said optical axis auto-creation unit recording coordinates of said ending point into a file.

9. A system according to claim 1, wherein said optical axis auto-creation unit defines a boundary wall model indicative of an optical axis extension limit around said three-dimensional optical model, said optical axis auto-creation unit if said optical path has no final arrival position providing an ending point, setting the position of said boundary wall model which said optical axis model intersects as an ending point of an extended optical axis model.

10. A system according to claim 1, wherein said optical axis auto-creation unit previously defines time-sequential variations of control parameters of said optical components lying on said optical path extending from said light source to an image forming face, said optical axis auto-creation unit allowing said three-dimensional model to perform continuous actions in accordance with said time-sequential variations of said control parameters, to thereby display a desired ending point trace in the shape of, e.g., a letter or a symbol on a final arrival face and to record coordinates of said ending point into a file.

11. A system according to claim 10, wherein

said optical axis auto-creation unit converts coordinate values of said ending point coordinates recorded in said file, into dot data, for the output from a printer.

12. An optical path simulation method comprising the steps of:

creating a three-dimensional optical model in which one or more optical components are disposed on an optical path extending from a light source to a final arrival position; and

calculating optical axes indicative of behaviors of beams of light in said three-dimensional optical model on the basis of predetermined set parameters, to provide displays of said optical axes in said three-dimensional optical model, for verification.

13. A method according to claim 12 further comprising the steps of:

defining the optical axis diameter and the color of a beam of light emitted from said light source; and

creating and arranging a cylindrical optical axis model having a length starting from said light source and ending in an input surface of a next adjacent optical component lying on said optical path.

14. A method according to claim 13 further comprising the step of:

varying the optical axis diameter of said optical axis model as a function of the distance from the starting point.

15. A method according to claim 12, further comprising the step of:

for said optical component(s) interposed between said light source and a final arrival position, creating output-side optical axis model(s) in conformity with optical functions of said optical component(s) from input optical axis model(s), to arrange said output-side optical axis model between said optical component and a next adjacent optical component or said final arrival position.

16. A method according to claim 15, wherein

in case said optical component lying on said optical path is a movable reflecting mirror that is capable of swinging around a predetermined rotational axis, it is possible to designate as control parameters the position of said rotational axis and the angle of a reflection surface within a three-dimensional space so that reflected optical axis models are automatically created, for arrangement, from input optical axis models on the basis of said control parameters.

17. A method according to claim 15, wherein

in case said optical component lying on said optical path is a polygon mirror that has a plurality of mirror faces formed on its periphery and that rotates at a certain angular velocity, the structures of said plurality of mirror faces are previously defined so that the positions of said mirror faces within a three-dimensional space and the angles of the reflection surfaces are figured out from mirror rotational angles and so that an optical axis model reflected on a specific mirror face is automatically created, for arrangement, from an input optical axis model.

18. A method according to claim 12, wherein

in case said optical component lying on said optical path is a lens, optical functions of said lens are previously defined so that an output-side optical axis model in conformity with said optical functions is automatically created from an input optical axis model and is arranged between said optical component and a next adjacent optical component or an image forming face.

19. A method according to claim 12, further comprising the steps of:

providing a display of an optical axis ending point at a position where an optical axis model intersects said final arrival face; and

recording coordinates of said ending point into a file.

20. A method according to claim 12, further comprising the steps of:

defining a boundary wall model indicative of an optical axis extension limit around said three-dimensional optical model; and

if said optical path has no final arrival position providing an ending point, setting the position of said boundary wall model which said optical axis model intersects as an ending point of an extended optical axis model.

21. A method according to claim 12, further comprising the steps of:

previously defining time-sequential variations of control parameters of said optical components lying on said optical path extending from said light source to an image forming face; and

allowing said three-dimensional model to perform continuous actions in accordance with said time-sequential variations of said control parameters, to thereby display a desired ending point trace in the shape of, e.g., a letter or a symbol on an image forming face and to record coordinates of said ending point into a file.

22. A method according to claim 12, further comprising the step of:

converting coordinate values of said ending point coordinates recorded in said file, into dot data, for the output from a printer.

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